



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



(11)

EP 2 460 559 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
29.05.2013 Bulletin 2013/22

(51) Int Cl.:
A61N 1/36 (2006.01)

A61N 1/378 (2006.01)

(43) Date of publication A2:
06.06.2012 Bulletin 2012/23

(21) Application number: **11009608.8**

(22) Date of filing: **06.12.2011**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

Designated Extension States:
BA ME

(30) Priority: **06.12.2010 JP 2010271889
06.12.2010 JP 2010271890**

(71) Applicant: **NIDEK CO., LTD
Gamagori-shi
Aichi (JP)**

(72) Inventor: **Shodo, Kenzo
Gamagori
Aichi (JP)**

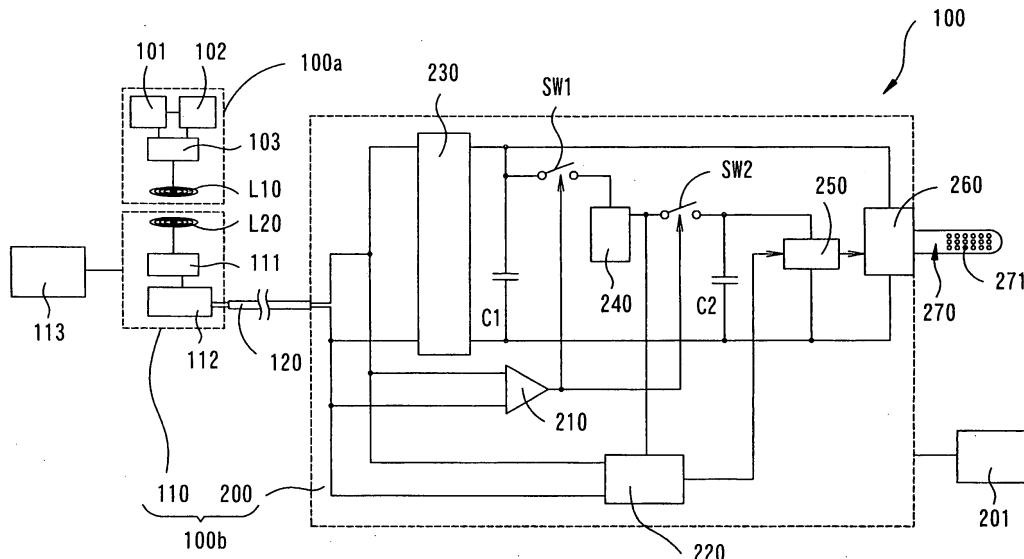
(74) Representative: **Hager, Thomas Johannes
Hoefer & Partner
Patentanwälte
Pilgersheimer Strasse 20
81543 München (DE)**

(54) Living tissue stimulation apparatus

(57) A living tissue stimulation apparatus includes: a power supply unit configured to generate alternating-current power and a control signal; a stimulation unit configured to output an electric stimulation pulse signal through a plurality of electrodes disposed in a living body of a patient based on the alternating-current power and the control signal to stimulate living tissue; a periodic

modulation circuit configured to periodically modulate the electric stimulation pulse signal based on the control signal and generates a periodic-modulated wave; and a clock signal generation portion configured to detect a waveform for each period of the periodic-modulated wave and generates a clock signal for operating the stimulation unit.

FIG. 1





EUROPEAN SEARCH REPORT

Application Number
EP 11 00 9608

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US 7 831 309 B1 (HUMAYUN MARK [US] ET AL) 9 November 2010 (2010-11-09) * figures 1-5 * * column 1, line 50 - column 2, line 22 * * column 2, line 45 - column 5, line 4; claims 1-3 * -----	1-11	INV. A61N1/36 A61N1/378
X	US 2002/161417 A1 (SCRIBNER DEAN [US]) 31 October 2002 (2002-10-31) * abstract; figures 1A-6 * * paragraphs [0028] - [0034] *	1-11	
X	US 6 458 157 B1 (SUANING GREGG JOERGEN [AU]) 1 October 2002 (2002-10-01) * abstract; figures 1, 3, 8-9 * * column 7, line 16 - column 8, line 22 * * column 9, line 17 - column 10, line 20 *	1-11	
X,D	JP 2010 187747 A (NIDEK KK) 2 September 2010 (2010-09-02) * the whole document *	1-11	
A,D	WO 03/077191 A1 (ENDOART S A [CH]; JORDAN ALAIN [CH]; MONTAVON JEAN-CHARLES [CH]) 18 September 2003 (2003-09-18) * figures 1, 4 * * page 3, line 12 - page 8, line 22 * -----	1-11	TECHNICAL FIELDS SEARCHED (IPC) A61N
The present search report has been drawn up for all claims			
1	Place of search Munich	Date of completion of the search 18 April 2013	Examiner Lahorte, Philippe
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 00 9608

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-04-2013

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 7831309	B1	09-11-2010		NONE		
US 2002161417	A1	31-10-2002	AU CA EP JP US US WO	2003212801 A1 2475294 A1 1471972 A2 2005516705 A 2002161417 A1 2004172100 A1 03067516 A2		02-09-2003 14-08-2003 03-11-2004 09-06-2005 31-10-2002 02-09-2004 14-08-2003
US 6458157	B1	01-10-2002		NONE		
JP 2010187747	A	02-09-2010		NONE		
WO 03077191	A1	18-09-2003	AU DE EP EP ES JP JP US US WO	2003219024 A1 60301954 T2 1343112 A1 1483730 A1 2251682 T3 4512887 B2 2005518914 A 2005104457 A1 2008108862 A1 03077191 A1		22-09-2003 06-07-2006 10-09-2003 08-12-2004 01-05-2006 28-07-2010 30-06-2005 19-05-2005 08-05-2008 18-09-2003